

PATENT ABSTRACTS OF JAPAN

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(54) REPRODUCING DEVICE AND RECORDING AND REPRODUCING DEVICE FOR MUSICAL INFORMATION

(57)Abstract:  
PROBLEM TO BE SOLVED: To match sound quality characteristics of musical information which is sounded out with its music genre without requiring user's complicated operation.  
SOLUTION: When an MD(minidisk) 1 is mounted on a device main body, a pickup 2 reads TOC(table of contents) information out and after a signal processing part 3 performs specific signal processing, the information is stored in the internal memory of a control microcomputer 9. When reproduction is indicated in this state by operating an operation input part 8, the control microcomputer 9 recognizes the music genre from the TOC information stored corresponding to the indicated music to be reproduced and an equalizer 5 is controlled to set equalizing matching the recognized music genre.



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CLAIMS

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[Claim(s)]

[Claim 1]An information reproducing device which reproduces music information corresponding to the index information data concerned based on index information data recorded on the above-mentioned recording medium using a recording medium with which music information and index information data corresponding to this music information were recorded, comprising:

A reading means which reads music genre information included in the above-mentioned index information data at the time of information reproduction.

An equalizing means to equalize music information played from the above-mentioned recording medium based on music genre information read by this reading means.

[Claim 2]While the above-mentioned recording medium records music information and index information data as a digital signal, The music information playback equipment according to claim 1, wherein it forms a D/A conversion means to change into analog sound easy information digital music information played from the above-mentioned recording medium and the above-mentioned equalizing means equalizes analog sound easy information changed by the above-mentioned D/A conversion means.

[Claim 3]The music information playback equipment according to claim 1 while the above-mentioned recording medium records music information and index information data as a digital signal, wherein the above-mentioned equalizing means carries out equalizing processing of the digital music information played from the above-mentioned recording medium in digital one.

[Claim 4]A recording medium with which music information and index information data corresponding to this music information characterized by comprising the following were recorded is used, While reproducing music information corresponding to the index information data concerned based on index information data recorded on the above-mentioned recording medium, record music information reproduced from other recording media on the above-mentioned recording medium, and. A music information recording and reproducing device which generates and records index information data corresponding to the music information concerned.

A control means which specifies a genre of music information.

A music genre information preparing means which makes a genre specified by this control means music genre information.

A recording control means which includes music genre information created by the above-mentioned music genre information preparing means by index information data generated corresponding to music information to record at the time of music information record.

A reading means which reads music genre information included in the above-mentioned index information data at the time of music information playback.

An equalizing means to equalize music information played from the above-mentioned recording medium based on music genre information read by this reading means.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to music information playback equipment and a music information recording and reproducing device. [0002]

[Description of the Prior Art]Conventionally, as music information playback equipment and a music information recording and reproducing device, From MD playback equipment which reads music information etc. and is reproduced from MD (Mini Disc) used as a recording medium, and MD used as a recording medium, read music information, and it reproduced, and there were a MD rec/play device etc. which can record music information on MD.

[0003]And as MD which serves as a recording medium in such MD playback equipment and MD rec/play device, There is an object for rec/play only for reproduction, and to MD only for reproduction. The address number showing the data recording regions which record music information, and the record section of each data recorded on these data recording regions, TOC (Table Of Contents) which consists of a track name showing each track name of each data unit recorded on data recording regions, a disk name of a recording medium, etc. The field is provided.

Each information is recorded by the digital signal.

[0004]The data recording regions which can record music information on MD for rec/play, and can rewrite the information, The TOC area which consists of an address number showing the record section of each data recorded on these data recording regions, etc., The UTOC (User Table Of Contents) field which can record the information on the track name showing each track name of each data unit recorded on data recording regions, the disk name of a recording medium, etc. and where a user can rewrite the information freely is provided.

The information which each information is recorded by a digital signal, and is rewritten is also a digital signal.

[0005][ and / when reproducing the above MD in MD playback equipment and MD rec/play device ], The number of music which read the information first recorded on the TOC area and the UTOC region, and was recorded on the data area of MD based on the read information, When a track name, a disk name, address information, etc. are recognized, and the number of music, a track name, a disk name, etc. are displayed and the reproduction instruction of specified music occurs by a user based on the displayed information, The field where the specified music was recorded has been recognized based on address information, and the music information corresponding to specified music was reproduced from the data area of MD.

[0006]In above MD playback equipment and MD rec/play devices, When changing into analog sound easy information the digital music information etc. which are reproduced from MD and carrying out sound emission outside from a loudspeaker, it was possible by carrying out optional setting of the equalizer by operation by a user to have acquired the sound quality characteristics which suited the genre of the music information by which external sound emission is carried out from a loudspeaker.

[0007]

[Problem(s) to be Solved by the Invention][ however, / when carrying out external sound emission of the music information reproduced from a recording medium with a device conventionally / above-mentioned ], What [ can double the sound quality characteristics of the music information with what suited the genre of the music information ], Since the sound quality characteristics which a user has to perform the setting out, and

there is a problem of requiring complicated operation, and suit the music information by the genre of the music information reproduced completely differ, Whenever the music information reproduced from a recording medium changed, sound quality characteristics had to be adjusted, and there was a problem that the setting operation was very troublesome.

[0008]An object of this invention is to provide the music information playback equipment and the music information recording and reproducing device to which external sound emission of the music information can be carried out with the sound quality characteristics suitable for the genre of music information without requiring the complicated operation by a user.

[0009]

[Means for Solving the Problem]To achieve the above objects, the invention according to claim 1, In an information reproducing device which reproduces music information corresponding to the index information data concerned based on index information data recorded on the above-mentioned recording medium using a recording medium with which music information and index information data corresponding to this music information were recorded, A reading means which reads music genre information included in the above-mentioned index information data, and an equalizing means to equalize music information played from the above-mentioned recording medium based on music genre information read by this reading means are formed at the time of information reproduction.

[0010]While the invention according to claim 2 records music information and index information data as a digital signal, the above-mentioned recording medium, Forming a D/A conversion means to change into analog sound easy information digital music information reproduced from the above-mentioned recording medium, the above-mentioned equalizing means equalizes analog sound easy information changed by the above-mentioned D/A conversion means.

[0011]While the above-mentioned recording medium records music information and index information data as a digital signal in the invention according to claim 3, the above-mentioned equalizing means carries out equalizing processing of the digital music information reproduced from the above-mentioned recording medium in digital one.

[0012]The invention according to claim 4 uses a recording medium with which music information and index information data corresponding to this music information were recorded, While reproducing music information corresponding to the index information data concerned based on index information data recorded on the above-mentioned recording medium, record music information reproduced from other recording media on the above-mentioned recording medium, and. In a music information recording and reproducing device which generates and records index information data corresponding to the music information concerned, A control means which specifies a genre of music information, and a music genre information preparing means which makes a genre specified by this control means music genre information, A recording control means which includes music genre information created by the above-mentioned music genre information preparing means by index information data generated corresponding to music information to record at the time of music information record, A reading means which reads music genre information included in the above-mentioned index information data, and an equalizing means to equalize music information played from the above-mentioned recording medium based on music genre information read by this reading means are formed at the time of music information playback.

[0013]Therefore, if index information data are reproduced from a recording medium with which a device main frame was equipped according to the invention according to claim 1, When a reading means reads music genre information in the played index information data and an equalizing means sets up equalizing based on the read music genre information, Equalizing which suited the music genre can be performed to music information reproduced from a recording medium.

[0014]If index information data are reproduced from a recording medium with which a device main frame was equipped according to the invention according to claim 2, A reading means reads music genre information in the played index information data, While an equalizing means sets up equalizing based on the read music genre information, digital music information played from a recording medium, After being changed into analog sound easy information by a D/A conversion means, when an equalizing means performs equalizing based on the above-mentioned setting out to the analog sound easy information, equalizing which suited the music genre can be performed to music information reproduced from a recording medium.

[0015]If index information data are reproduced from a recording medium with which a device main frame was equipped according to the invention according to claim 3, A reading means reads music genre information in



the played index information data, While an IKOREIJINGU means sets up equalizing based on the read music genre information, When an equalizing means equalizes in digital one digital music information reproduced from a recording medium based on the setting out, equalizing which suited the music genre can be performed to music information reproduced from a recording medium.

[0016][ when record of music information to a recording medium with which a device main frame was equipped is performed according to the invention according to claim 4 ], If a genre of music information recorded by control means is specified, a music genre information preparing means will create music genre information based on the specified genre, By including the created music genre information in index information data generated corresponding to music information which a recording control means records, If index information data are played from a recording medium with which a device main frame was equipped while music information and music genre information corresponding to the music information concerned are recordable on a recording medium, When a reading means reads music genre information in the played index information data and an equalizing means sets up equalizing based on the read music genre information, Equalizing which suited the music genre can be performed to music information reproduced from a recording medium.

[0017]

[Embodiment of the Invention] Hereafter, an embodiment of the invention is described in detail with reference to drawings.

[0018] The outline functional block diagram in which drawing 1 shows the electric constitution of the music information playback equipment which is the first example of this invention, The explanatory view showing the example of a data configuration of a memory [ in / in drawing 2 / a same sound easy information reproducing device ], The explanatory view showing the example [ in / in drawing 3 / a same sound easy information reproducing device ] of equalizing setting out, The flow chart which shows the motion control at the time of music information playback [ in / in drawing 4 / a same sound easy information reproducing device ], The outline functional block diagram in which drawing 5 shows the electric constitution of the music information playback equipment which is the second example of this invention, The outline functional block diagram and drawing 7 in which the electric constitution of the music information recording and reproducing device whose drawing 6 is the third example of this invention is shown are a flow chart which shows the motion control at the time of the music information record in same sound easy information storage playback equipment.

[0019] The [first example] The first example of this invention is described based on drawing 1 thru/or drawing 4.

[0020] MD on which the TOC information or UTOC (index information data) corresponding to music information and the music information concerned in 1 was recorded as a digital signal in drawing 1, 2 is a pickup which reads the digital signal recorded on MD1, and is provided by the drive mechanism which is not illustrated, enabling free movement to the radial direction of MD1. The signal processing part which performs predetermined signal processing to the digital signal in which 3 was read by the pickup 2, The D/A conversion part from which 4 changes into an analog signal the digital signal with which signal processing was performed by the signal processing part 3, The equalizer with which 5 amplifies or decreases the level of each predetermined frequency band of an analog signal changed by the D/A conversion part 4 (equalizing), AMP which amplifies the analog signal with which 6 was equalized by the equalizer 5, The loudspeaker which 7 changes into vibration the analog signal amplified by AMP6, and carries out sound emission outside as a sound, The operation input section to which 8 performs directions of reproduction / rapid traverse / rewinding / stop / halt, song selection operation, etc., Predetermined signal processing 9 based on the given TOC information and the operator guidance by the operation input section 8 by the signal processing part 3 The drive controlling of the pickup 2, It is a control microcomputer which performs signal-processing control by the signal processing part 3, and equalizing setting-out control by the equalizer 5, and the memory for memorizing TOC information is built in.

[0021] About the music information playback equipment constituted as mentioned above, the motion control at the time of music information playback is explained.

[0022] MD1 equips a device main frame -- having (step F1) -- it is stored in the memory of built-in in the control microcomputer 9, after TOC information or UTOC information is read in the MD1 with which it was equipped by the pickup 2 and predetermined signal processing is performed by the signal processing part 3 (Step F2). At this time, as shown in drawing 2 at the memory of built-in in the control microcomputer 9, the disk name and music genre of MD1, and the address of the track name to each music, its music genre, and its music are memorized to each field.

[0023]and -- in such a state, a user operates the operation input section 8 -- reproduction instruction -- carrying out (Step F3). It is judged whether the music genre is memorized as the TOC information corresponding to the music by which reproduction instruction was carried out in the control microcomputer 9, or UTOC information (Step F4). When it is judged that the music genre is memorized, equalizing whose music genre which controlled the equalizer 5 and has been recognized the control microcomputer 9 suited is set up (Step F5).

[0024]Namely, in the state where TOC information as shown in drawing 2 (a) is stored in the memory of built-in in the control microcomputer 9 for example, If a user operates the operation input section 8 and performs reproduction instruction of the 2nd music, the control microcomputer 9 will be set as a value as controls the equalizer 5 and shows drawing 3 (d) the level of each frequency band, and will make equalizing by the equalizer 5 "VOCAL".

[0025]On the other hand, a user operates the operation input section 8 and performs reproduction instruction (Step F3). When it is judged that the music genre is not memorized in the control microcomputer 9 as the TOC information corresponding to the music by which reproduction instruction was carried out, or UTOC information (Step F4), Next, when it judges whether the music genre corresponding to a disk name is memorized (Step F6) and it is judged that the music genre is memorized, equalizing whose music genre which controlled the equalizer 5 and has been recognized the control microcomputer 9 suited is set up (Step F7).

[0026]Namely, in the state where TOC information as shown in drawing 2 (a) is stored in the memory of built-in in the control microcomputer 9 for example, If a user operates the operation input section 8 and performs reproduction instruction of the 3rd music, the control microcomputer 9 will be set as a value as controls the equalizer 5 and shows drawing 3 (a) the level of each frequency band, and will make equalizing by the equalizer 5 "ROCK".

[0027]A user operates the operation input section 8 and performs reproduction instruction (Step F3). It is judged that the music genre is not memorized in the control microcomputer 9 as the TOC information corresponding to the music by which reproduction instruction was carried out, or UTOC information (Step F4). And when it is judged that \*\*\*\*\* corresponding to a disk name is not memorized (Step F6), It is set as a value as the control microcomputer 9 controls the equalizer 5 and shows drawing 3 (e) the level of each frequency band (Step F8), and equalizing by the equalizer 5 is made into "FLAT".

[0028]Namely, in the state where TOC information as shown in drawing 2 (b) is stored in the memory of built-in in the control microcomputer 9 for example, If a user operates the operation input section 8 and performs reproduction instruction of the 1st music, the control microcomputer 9 will be set as a value as controls the equalizer 5 and shows drawing 3 (e) the level of each frequency band, and will make equalizing by the equalizer 5 "FLAT".

[0029]And after setting out of equalizing by the above equalizers 5 was performed, You make it located in the data area where the music the control microcomputer 9 carried out drive controlling of the pickup 2 based on the TOC information or UTOC information memorized by the built-in memory, and reproduction instruction was carried out [ music ] by the operation input section 8 was recorded, and music information is read from the prescribed position of the data area concerned (Step F9).

[0030]And after predetermined signal processing was performed by the signal processing part 3 in this way to the music information (digital signal) read from MD1 by the pickup 2, It is changed into an analog signal by the D/A conversion part 4, and after the analog signal is equalized by the equalizer 5, it is amplified by AMP6 and sound emission is carried out outside from the loudspeaker 7.

[0031]Therefore, when reproducing the music information recorded on MD1 according to the above-mentioned motion control, the sound quality characteristics which suited the genre of the music information can be acquired automatically.

[0032]The [second example] The second example of this invention is described based on drawing 5. Common numerals are given to the portion which is common in drawing 1 in drawing 5.

[0033]In drawing 5, while 11 acquires a digital audio signal by performing predetermined signal processing to the digital signal read in MD1 by the pickup 2, The signal processing part which equalizes the digital audio signal in digital one, the digital output terminal which outputs the digital signal with which signal processing of 12 was done by the signal processing part 11 to the device exterior, and 13 are music information recorders which record the digital signal outputted from the digital output terminal 11.

[0034]And if a user operates the operation input section 8 and performs reproduction instruction in the music information playback equipment constituted as mentioned above, When the music genre of the music which



reproduction instruction accomplished is recognized and the control microcomputer 9 controls the signal processing part 11 by the same motion control as the first above-mentioned example based on the music genre. The digital audio signal concerned is equalized in digital one by performing predetermined signal processing to the digital audio signal to which signal processing might be performed to the digital signal read in MD1 by the pickup 2.

[0035]And the digital audio signal equalized by the signal processing part 11, After being changed into an analog signal by the D/A conversion part 4, while it is amplified by AMP6 and sound emission is carried out outside from the loudspeaker 7, it is inputted into the music information recorder 13 through the digital output terminal 12, and digital sound recording is carried out by this music information recorder 13.

[0036]With this digital equalizing. By changing a digital audio signal into an analog signal by the D/A change part 4. So that it may become a signal equivalent to the time of carrying out the A/D conversion of the analog audio signal with which predetermined sound quality characteristics were acquired by amplifying / decreasing the level of the predetermined frequency band of the analog audio signal acquired, and considering it as a digital audio signal, Predetermined signal processing is performed to a digital audio signal, and if the digital audio signal equalized by the signal processing part 11 is changed into an analog signal by the D/A conversion part 4, the analog audio signal with which predetermined sound quality characteristics were acquired will be acquired.

[0037]Therefore, when the sound quality characteristics which suited the genre of the music information can be automatically acquired when playing the music information recorded on MD1 according to the above-mentioned motion control, and carrying out digital sound recording, the digital output of the music information from which the optimal sound quality characteristics were acquired can be carried out.

[0038]The [third example] The third example of this invention is described based on drawing 6 and drawing 7.

[0039]In drawing 6, common numerals are given to the portion which is common in drawing 1.

[0040]Music information playback equipment provided with the digital output terminal in which 21 outputs a digital audio signal in drawing 6. While the digital input terminal in which 22 carries out the external input of the digital audio signal, and 23 perform predetermined signal processing to the digital audio signal inputted from the digital input terminal 22, The signal processing part which performs predetermined signal processing to the digital signal from MD1 read by the pickup 2, 24 is a magnetic head which performs magnetic field modulation based on the digital signal from the digital input terminal 22 by which signal processing was carried out, and is impressed to MD1, with the drive mechanism which is not illustrated, follows with the pickup 2 and is provided by the signal processing part 23, enabling free movement to the radial direction of MD1.

[0041]The TOC information to which predetermined signal processing was performed by the signal processing part 3 25, And based on the operator guidance by the operation input section 8, perform drive controlling of the pickup 2, signal-processing control by the signal processing part 3, equalizing setting-out control by the equalizer 5, and drive controlling of the magnetic head 24, and. The digital signal from the digital input terminal 22 by which signal processing was done in the signal processing part 23, It is a control microcomputer which creates UTOC information based on the disk name / track name / genre name by which the operational input was carried out by the absolute address read by the pickup 2, and the operation input section 8, and the memory for memorizing TOC information and UTOC information is built in.

[0042>About the music information recording and reproducing device constituted as mentioned above, the motion control at the time of music information record is explained.

[0043]In the state where a device main frame is equipped with MD1, the TOC information or UTOC information of MD1 with which it was equipped is read, and it is stored in the memory of built-in in the control microcomputer 25, a user operates the operation input section 8 -- recording instruction -- carrying out (Step F11). The empty data area of MD1 where the device main frame was equipped with the control microcomputer 25 based on the TOC information or UTOC information memorized by the built-in memory is recognized, While carrying out drive controlling of the pickup 2 and the magnetic head 24 and you make it located in the empty data area, By irradiating MD1 with an optical beam from the pickup 2 at the same time it supplies the digital signal from the digital terminal by which signal processing was done in the signal processing part 23 to the magnetic head 24 and impresses magnetic field modulation to MD1, The digital signal by which signal processing was supplied and carried out from the digital terminal 22 is recorded on MD1 (Step F12).

[0044]and record of the digital signal to the above MD1 -- ending (Step F13) -- the control microcomputer 25 creating TOC information based on that record result (Step F14), and at this time. a user operates the operation input section 8 -- a disk name or a track name -- inputting (Step F15) -- it includes in the TOC

information or UTOC information which created the inputted disk name, the track name, or the music genre (Step F16). The created TOC information or UTOC information is stored in the memory of built-in in the control microcomputer 25.

[0045]and -- a user judges that the registered contents may be sufficient, and operates the operation input section 8 -- the completion of record -- directing (Step F17). The control microcomputer 25 records the TOC information or UTOC information stored in the internal memory on the TOC area or UTOC region of MD1 by the motion control at the time of the above-mentioned data recording, and the same motion control (Step F18).

[0046]Therefore, when carrying out a digital recording to MD1 equipped with the music information by which the external input was carried out according to the above-mentioned motion control, the music genre suitable for the music information can be made to be able to respond to the music information, and it can record on MD1.

[0047]Although the time of recording on MD1 the digital signal by which the external input was carried out in the above-mentioned example was explained, When making not the thing to limit to this but the music recorded, for example on the recording medium divided or annexed (at the time of edit), it may be made to record on MD1 similarly by making the music genre of the edited music concerned into TOC information or UTOC information, As motion control in that case, it is the same as that of the motion control (Step F14 - Step F18) of the above-mentioned example, and abbreviated \*\*, and omits about the detailed explanation.

[0048]About the motion control at the time of music information playback, it is the same as that of the motion control in the first above-mentioned example, and omits about the explanation.

[0049]

[Effect of the Invention]As mentioned above, by according to the invention according to claim 1 or 2, reading the music genre corresponding to the music information played from a recording medium at the time of music information playback, and setting up equalizing which suited the music genre, External sound emission of the music information reproduced from the recording medium by the sound quality characteristics suitable for the music genre of music information can be carried out without requiring the complicated operation by a user.

[0050]According to the invention according to claim 3, the music genre corresponding to the music information played from a recording medium is read at the time of music information playback, After setting up equalizing which suited the music genre, by performing equalizing of the digital music information in digital one, External sound emission of the music information reproduced from the recording medium by the sound quality characteristics suitable for the music genre of music information can be carried out without requiring the complicated operation by a user, and -- [ when carrying out the digital recording of the music information reproduced from a recording medium to other recording media ] -- being concerned -- others -- the music information accomplished to the optimal sound quality characteristics for a recording medium is recordable.

[0051]While recording the music genre corresponding to the music information concerned on a recording medium with music information at the time of music information record according to the invention according to claim 4, By reading the music genre corresponding to the music information played from a recording medium at the time of music information playback, and setting up equalizing which suited the music genre, External sound emission of the music information reproduced from the recording medium by the sound quality characteristics suitable for the music genre of music information can be carried out without requiring the complicated operation by a user.

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TECHNICAL FIELD

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[Field of the Invention]This invention relates to music information playback equipment and a music information recording and reproducing device.

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PRIOR ART

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[Description of the Prior Art]Conventionally, as music information playback equipment and a music information recording and reproducing device, From MD playback equipment which reads music information etc. and is reproduced from MD (Mini Disc) used as a recording medium, and MD used as a recording medium, read music information, and it reproduced, and there were a MD rec/play device etc. which can record music information on MD.

[0003]And as MD which serves as a recording medium in such MD playback equipment and MD rec/play device, There is an object for rec/play only for reproduction, and to MD only for reproduction. The address number showing the data recording regions which record music information, and the record section of each data recorded on these data recording regions, TOC (Table Of Contents) which consists of a track name showing each track name of each data unit recorded on data recording regions, a disk name of a recording medium, etc. The field is provided.

Each information is recorded by the digital signal.

[0004]The data recording regions which can record music information on MD for rec/play, and can rewrite the information, The TOC area which consists of an address number showing the record section of each data recorded on these data recording regions, etc., The UTOC (User Table Of Contents) field which can record the information on the track name showing each track name of each data unit recorded on data recording regions, the disk name of a recording medium, etc. and where a user can rewrite the information freely is provided.

The information which each information is recorded by a digital signal, and is rewritten is also a digital signal.

[0005][ and / when reproducing the above MD in MD playback equipment and MD rec/play device ], The number of music which read the information first recorded on the TOC area and the UTOC region, and was recorded on the data area of MD based on the read information, When a track name, a disk name, address information, etc. are recognized, and the number of music, a track name, a disk name, etc. are displayed and the reproduction instruction of specified music occurs by a user based on the displayed information, The field where the specified music was recorded has been recognized based on address information, and the music information corresponding to specified music was reproduced from the data area of MD.

[0006]In above MD playback equipment and MD rec/play devices, When changing into analog sound easy information the digital music information etc. which are reproduced from MD and carrying out sound emission outside from a loudspeaker, it was possible by carrying out optional setting of the equalizer by operation by a user to have acquired the sound quality characteristics which suited the genre of the music information by which external sound emission is carried out from a loudspeaker.

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EFFECT OF THE INVENTION

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[Effect of the Invention]As mentioned above, by according to the invention according to claim 1 or 2, reading the music genre corresponding to the music information played from a recording medium at the time of music information playback, and setting up equalizing which suited the music genre, External sound emission of the music information reproduced from the recording medium by the sound quality characteristics suitable for the music genre of music information can be carried out without requiring the complicated operation by a user.

[0050]According to the invention according to claim 3, the music genre corresponding to the music information played from a recording medium is read at the time of music information playback, After setting up equalizing which suited the music genre, by performing equalizing of the digital music information in digital one, External sound emission of the music information reproduced from the recording medium by the sound quality characteristics suitable for the music genre of music information can be carried out without requiring the complicated operation by a user, and -- [ when carrying out the digital recording of the music information reproduced from a recording medium to other recording media ] -- being concerned -- others -- the music information accomplished to the optimal sound quality characteristics for a recording medium is recordable.

[0051]While recording the music genre corresponding to the music information concerned on a recording medium with music information at the time of music information record according to the invention according to claim 4, By reading the music genre corresponding to the music information played from a recording medium at the time of music information playback, and setting up equalizing which suited the music genre, External sound emission of the music information reproduced from the recording medium by the sound quality characteristics suitable for the music genre of music information can be carried out without requiring the complicated operation by a user.

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention][ however, / when carrying out external sound emission of the music information reproduced from a recording medium with a device conventionally / above-mentioned ], What [ can double the sound quality characteristics of the music information with what suited the genre of the music information ], Since the sound quality characteristics which a user has to perform the setting out, and there is a problem of requiring complicated operation, and suit the music information by the genre of the music information reproduced completely differ, Whenever the music information reproduced from a recording medium changed, sound quality characteristics had to be adjusted, and there was a problem that the setting operation was very troublesome.

[0008]An object of this invention is to provide the music information playback equipment and the music information recording and reproducing device to which external sound emission of the music information can be carried out with the sound quality characteristics suitable for the genre of music information without requiring the complicated operation by a user.

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**MEANS**

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[Means for Solving the Problem]To achieve the above objects, the invention according to claim 1, In an information reproducing device which reproduces music information corresponding to the index information data concerned based on index information data recorded on the above-mentioned recording medium using a recording medium with which music information and index information data corresponding to this music information were recorded, A reading means which reads music genre information included in the above-mentioned index information data, and an equalizing means to equalize music information played from the above-mentioned recording medium based on music genre information read by this reading means are formed at the time of information reproduction.

[0010]While the invention according to claim 2 records music information and index information data as a digital signal, the above-mentioned recording medium, Forming a D/A conversion means to change into analog sound easy information digital music information reproduced from the above-mentioned recording medium, the above-mentioned equalizing means equalizes analog sound easy information changed by the above-mentioned D/A conversion means.

[0011]While the above-mentioned recording medium records music information and index information data as a digital signal in the invention according to claim 3, the above-mentioned equalizing means carries out equalizing processing of the digital music information reproduced from the above-mentioned recording medium in digital one.

[0012]The invention according to claim 4 uses a recording medium with which music information and index information data corresponding to this music information were recorded, While reproducing music information corresponding to the index information data concerned based on index information data recorded on the above-mentioned recording medium, record music information reproduced from other recording media on the above-mentioned recording medium, and. In a music information recording and reproducing device which generates and records index information data corresponding to the music information concerned, A control means which specifies a genre of music information, and a music genre information preparing means which makes a genre specified by this control means music genre information, A recording control means which includes music genre information created by the above-mentioned music genre information preparing means by index information data generated corresponding to music information to record at the time of music information record, A reading means which reads music genre information included in the above-mentioned index information data, and an equalizing means to equalize music information played from the above-mentioned recording medium based on music genre information read by this reading means are formed at the time of music information playback.

[0013]Therefore, if index information data are reproduced from a recording medium with which a device main frame was equipped according to the invention according to claim 1, When a reading means reads music genre information in the played index information data and an equalizing means sets up equalizing based on the read music genre information, Equalizing which suited the music genre can be performed to music information reproduced from a recording medium.

[0014]If index information data are reproduced from a recording medium with which a device main frame was equipped according to the invention according to claim 2, A reading means reads music genre information in the played index information data, While an equalizing means sets up equalizing based on the read music genre information, digital music information played from a recording medium, After being changed into analog sound easy information by a D/A conversion means, when an equalizing means performs equalizing based on the above-mentioned setting out to the analog sound easy information, equalizing which suited the music genre

can be performed to music information reproduced from a recording medium.

[0015] If index information data are reproduced from a recording medium with which a device main frame was equipped according to the invention according to claim 3, A reading means reads music genre information in the played index information data, While an IKOREIJINGU means sets up equalizing based on the read music genre information, When an equalizing means equalizes in digital one digital music information reproduced from a recording medium based on the setting out, equalizing which suited the music genre can be performed to music information reproduced from a recording medium.

[0016] [ when record of music information to a recording medium with which a device main frame was equipped is performed according to the invention according to claim 4 ], If a genre of music information recorded by control means is specified, a music genre information preparing means will create music genre information based on the specified genre, By including the created music genre information in index information data generated corresponding to music information which a recording control means records, If index information data are played from a recording medium with which a device main frame was equipped while music information and music genre information corresponding to the music information concerned are recordable on a recording medium, When a reading means reads music genre information in the played index information data and an equalizing means sets up equalizing based on the read music genre information, Equalizing which suited the music genre can be performed to music information reproduced from a recording medium.

[0017]

[Embodiment of the Invention] Hereafter, an embodiment of the invention is described in detail with reference to drawings.

[0018] The outline functional block diagram in which drawing 1 shows the electric constitution of the music information playback equipment which is the first example of this invention, The explanatory view showing the example of a data configuration of a memory [ in / in drawing 2 / a same sound easy information reproducing device ], The explanatory view showing the example [ in / in drawing 3 / a same sound easy information reproducing device ] of equalizing setting out, The flow chart which shows the motion control at the time of music information playback [ in / in drawing 4 / a same sound easy information reproducing device ], The outline functional block diagram in which drawing 5 shows the electric constitution of the music information playback equipment which is the second example of this invention, The outline functional block diagram and drawing 7 in which the electric constitution of the music information recording and reproducing device whose drawing 6 is the third example of this invention is shown are a flow chart which shows the motion control at the time of the music information record in same sound easy information storage playback equipment.

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[Translation done.]



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## EXAMPLE

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The [first example] The first example of this invention is described based on drawing 1 thru/or drawing 4.  
[0020]MD on which the TOC information or UTOC (index information data) corresponding to music information and the music information concerned in 1 was recorded as a digital signal in drawing 1, 2 is a pickup which reads the digital signal recorded on MD1, and is provided by the drive mechanism which is not illustrated, enabling free movement to the radial direction of MD1. The signal processing part which performs predetermined signal processing to the digital signal in which 3 was read by the pickup 2, The D/A conversion part from which 4 changes into an analog signal the digital signal with which signal processing was performed by the signal processing part 3, The equalizer with which 5 amplifies or decreases the level of each predetermined frequency band of an analog signal changed by the D/A conversion part 4 (equalizing), AMP which amplifies the analog signal with which 6 was equalized by the equalizer 5, The loudspeaker which 7 changes into vibration the analog signal amplified by AMP6, and carries out sound emission outside as a sound, The operation input section to which 8 performs directions of reproduction / rapid traverse / rewinding / stop / halt, song selection operation, etc., Predetermined signal processing 9 based on the given TOC information and the operator guidance by the operation input section 8 by the signal processing part 3 The drive controlling of the pickup 2, It is a control microcomputer which performs signal-processing control by the signal processing part 3, and equalizing setting-out control by the equalizer 5, and the memory for memorizing TOC information is built in.

[0021>About music information playback equipment constituted as mentioned above, motion control at the time of music information playback is explained.

[0022]MD1 equips a device main frame -- having (step F1) -- it is stored in a memory of built-in in the control microcomputer 9, after TOC information or UTOC information is read in the MD1 with which it was equipped by the pickup 2 and predetermined signal processing is performed by the signal processing part 3 (Step F2). At this time, as shown in drawing 2 at a memory of built-in in the control microcomputer 9, a disk name and a music genre of MD1, and an address of a track name to each music, its music genre, and its music are memorized to each field.

[0023]and -- in such a state, a user operates the operation input section 8 -- reproduction instruction -- carrying out (Step F3). It is judged whether a music genre is memorized as TOC information corresponding to the music by which reproduction instruction was carried out in the control microcomputer 9, or UTOC information (Step F4), When it is judged that a music genre is memorized, equalizing whose music genre which controlled the equalizer 5 and has been recognized the control microcomputer 9 suited is set up (Step F5).  
[0024]Namely, in the state where TOC information as shown in drawing 2 (a) is stored in the memory of built-in in the control microcomputer 9 for example, If a user operates the operation input section 8 and performs reproduction instruction of the 2nd music, the control microcomputer 9 will be set as a value as controls the equalizer 5 and shows drawing 3 (d) the level of each frequency band, and will make equalizing by the equalizer 5 "VOCAL".

[0025]On the other hand, a user operates the operation input section 8 and performs reproduction instruction (Step F3), When it is judged that the music genre is not memorized in the control microcomputer 9 as the TOC information corresponding to the music by which reproduction instruction was carried out, or UTOC information (Step F4), Next, when it judges whether the music genre corresponding to a disk name is memorized (Step F6) and it is judged that the music genre is memorized, equalizing whose music genre which controlled the equalizer 5 and has been recognized the control microcomputer 9 suited is set up (Step F7).

[0026]Namely, in the state where TOC information as shown in drawing 2 (a) is stored in the memory of built-

in in the control microcomputer 9 for example, If a user operates the operation input section 8 and performs reproduction instruction of the 3rd music, the control microcomputer 9 will be set as a value as controls the equalizer 5 and shows drawing 3 (a) the level of each frequency band, and will make equalizing by the equalizer 5 "ROCK".

[0027]A user operates the operation input section 8 and performs reproduction instruction (Step F3), It is judged that the music genre is not memorized in the control microcomputer 9 as the TOC information corresponding to the music by which reproduction instruction was carried out, or UTOC information (Step F4), And when it is judged that \*\*\*\*\* corresponding to a disk name is not memorized (Step F6), It is set as a value as the control microcomputer 9 controls the equalizer 5 and shows drawing 3 (e) the level of each frequency band (Step F8), and equalizing by the equalizer 5 is made into "FLAT".

[0028]Namely, in the state where TOC information as shown in drawing 2 (b) is stored in the memory of built-in in the control microcomputer 9 for example, If a user operates the operation input section 8 and performs reproduction instruction of the 1st music, the control microcomputer 9 will be set as a value as controls the equalizer 5 and shows drawing 3 (e) the level of each frequency band, and will make equalizing by the equalizer 5 "FLAT".

[0029]And after setting out of equalizing by the above equalizers 5 was performed, You make it located in the data area where the music the control microcomputer 9 carried out drive controlling of the pickup 2 based on the TOC information or UTOC information memorized by the built-in memory, and reproduction instruction was carried out [ music ] by the operation input section 8 was recorded, and music information is read from the prescribed position of the data area concerned (Step F9).

[0030]And after predetermined signal processing was performed by the signal processing part 3 in this way to the music information (digital signal) read from MD1 by the pickup 2, It is changed into an analog signal by the D/A conversion part 4, and after the analog signal is equalized by the equalizer 5, it is amplified by AMP6 and sound emission is carried out outside from the loudspeaker 7.

[0031]Therefore, when reproducing music information recorded on MD1 according to the above-mentioned motion control, sound quality characteristics which suited a genre of the music information can be acquired automatically.

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## DESCRIPTION OF DRAWINGS

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### [Brief Description of the Drawings]

[Drawing 1]The outline functional block diagram showing the electric constitution of the music information playback equipment which is the first example of this invention.

[Drawing 2]The explanatory view showing the example of a data configuration of the memory in a same sound easy information reproducing device.

[Drawing 3]The explanatory view showing the example of equalizing setting out in a same sound easy information reproducing device.

[Drawing 4]The flow chart which shows the motion control at the time of the music information playback in a same sound easy information reproducing device.

[Drawing 5]The outline functional block diagram showing the electric constitution of the music information playback equipment which is the second example of this invention.

[Drawing 6]The outline functional block diagram showing the electric constitution of the music information recording and reproducing device which is the third example of this invention.

[Drawing 7]The flow chart which shows the motion control at the time of the music information record in same sound easy information storage playback equipment.

### [Description of Notations]

- 1 MD
- 2 Pickup
- 3 Signal processing part
- 4 D/A conversion part
- 5 Equalizer
- 6 AMP
- 7 Loudspeaker
- 8 Operation input section
- 9 Control microcomputer

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[Translation done.]



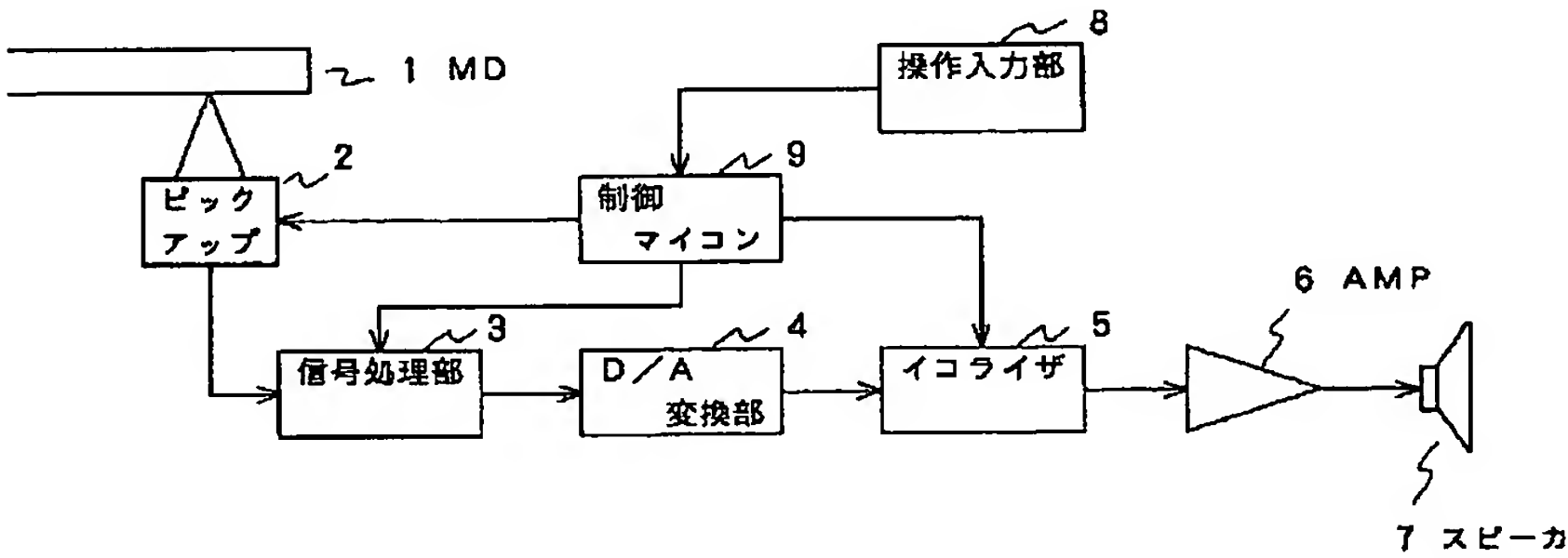
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DRAWINGS

[Drawing 1]



[Drawing 2]

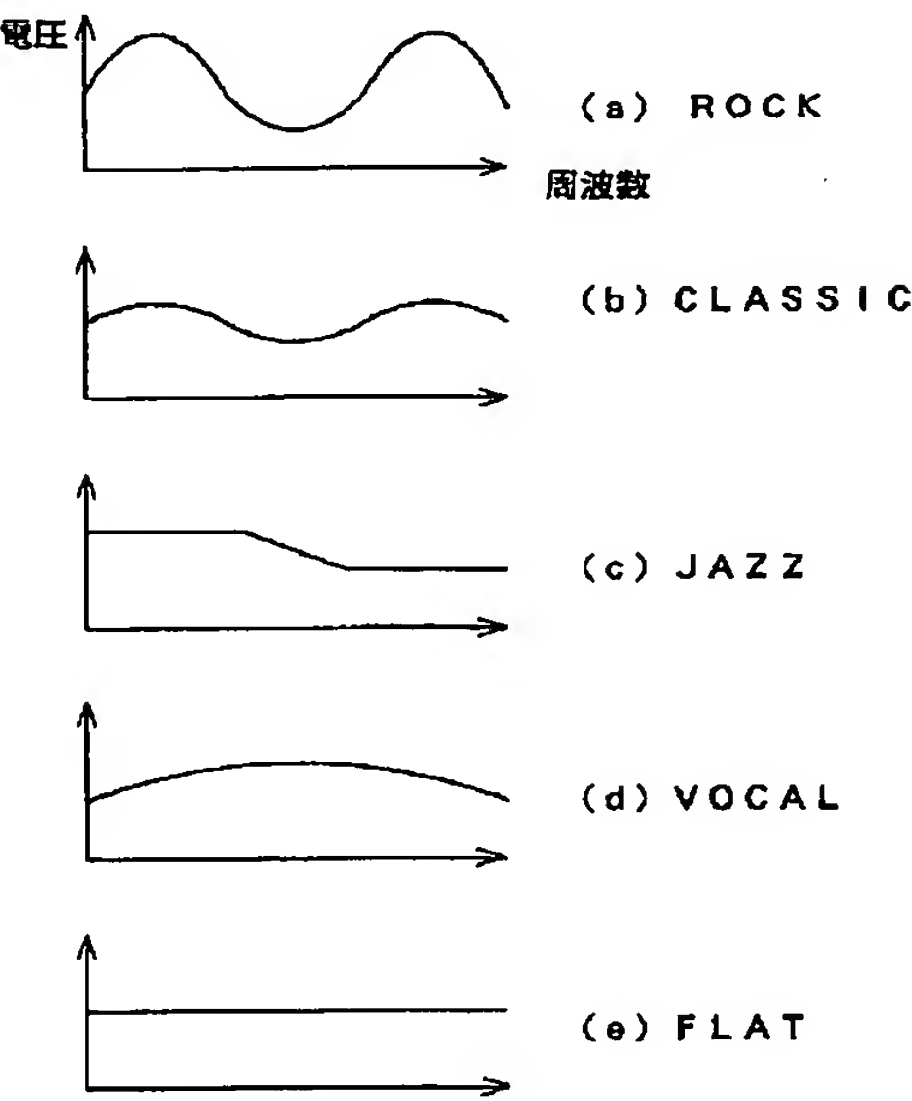
	ネーム	音楽ジャンル	アドレス
ディスク	oooooooooooo	ROCK	
TNO1	ΔΔΔΔΔΔΔ		.....
TNO2		VOCAL	.....
TNO3	oooooooooooo	ROCK	.....
TNO4	ΔΔΔΔ	FLAT	.....
TNO5			

(a)

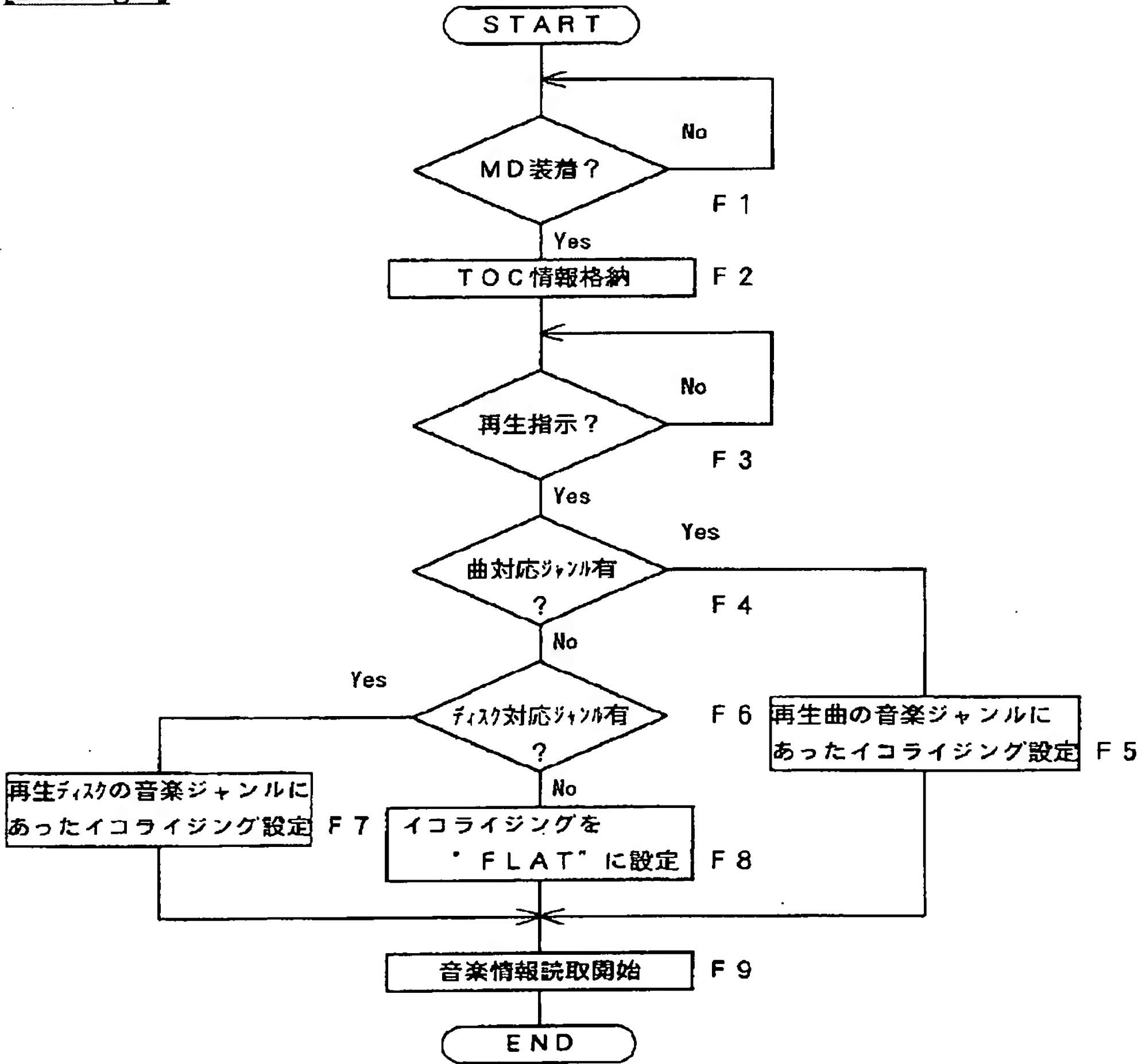
	ネーム	音楽ジャンル	アドレス
ディスク	oooooooooooo		
TNO1	ΔΔΔΔΔΔΔ		.....
TNO2		VOCAL	.....
TNO3	oooooooooooo	ROCK	.....
TNO4	ΔΔΔΔ	FLAT	.....
TNO5			

(b)

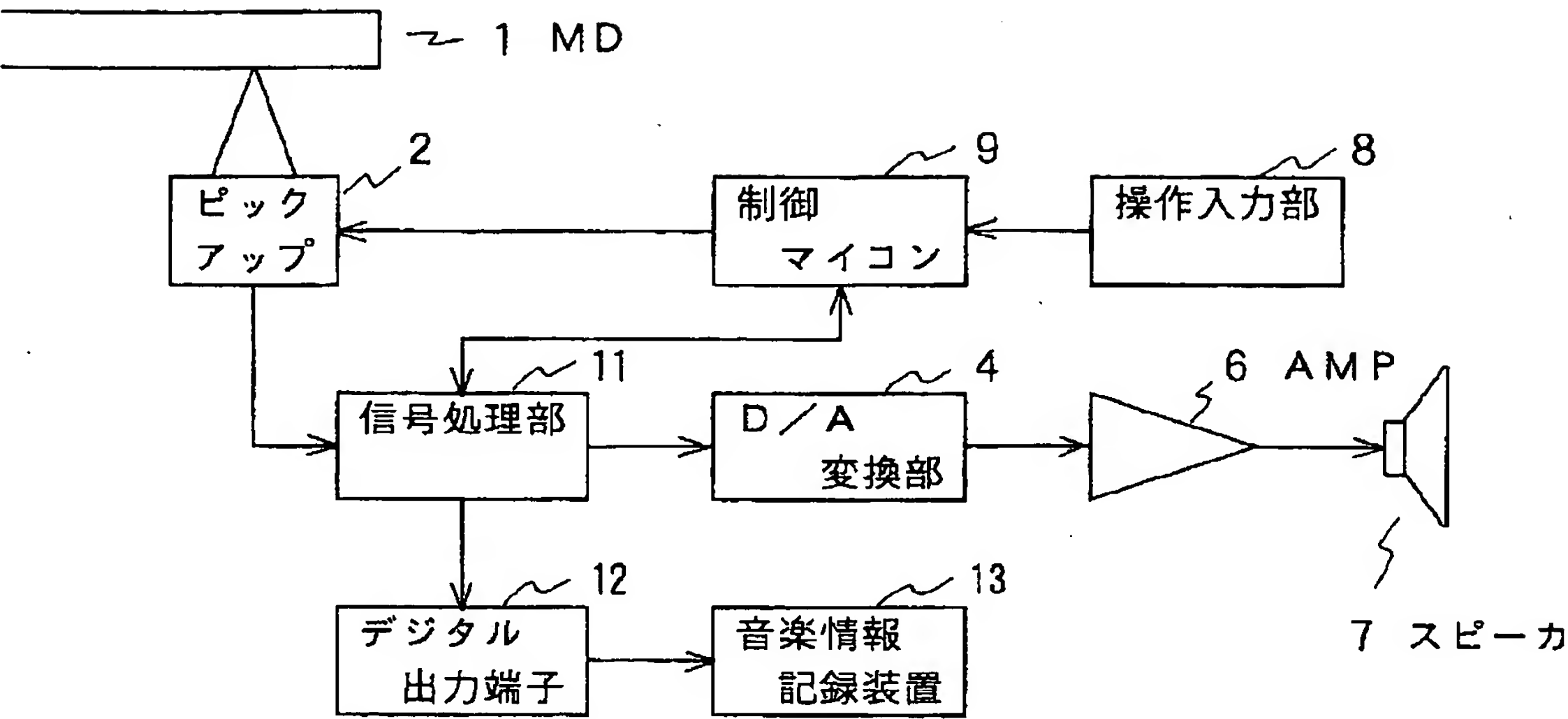
[Drawing 3]



[Drawing 4]

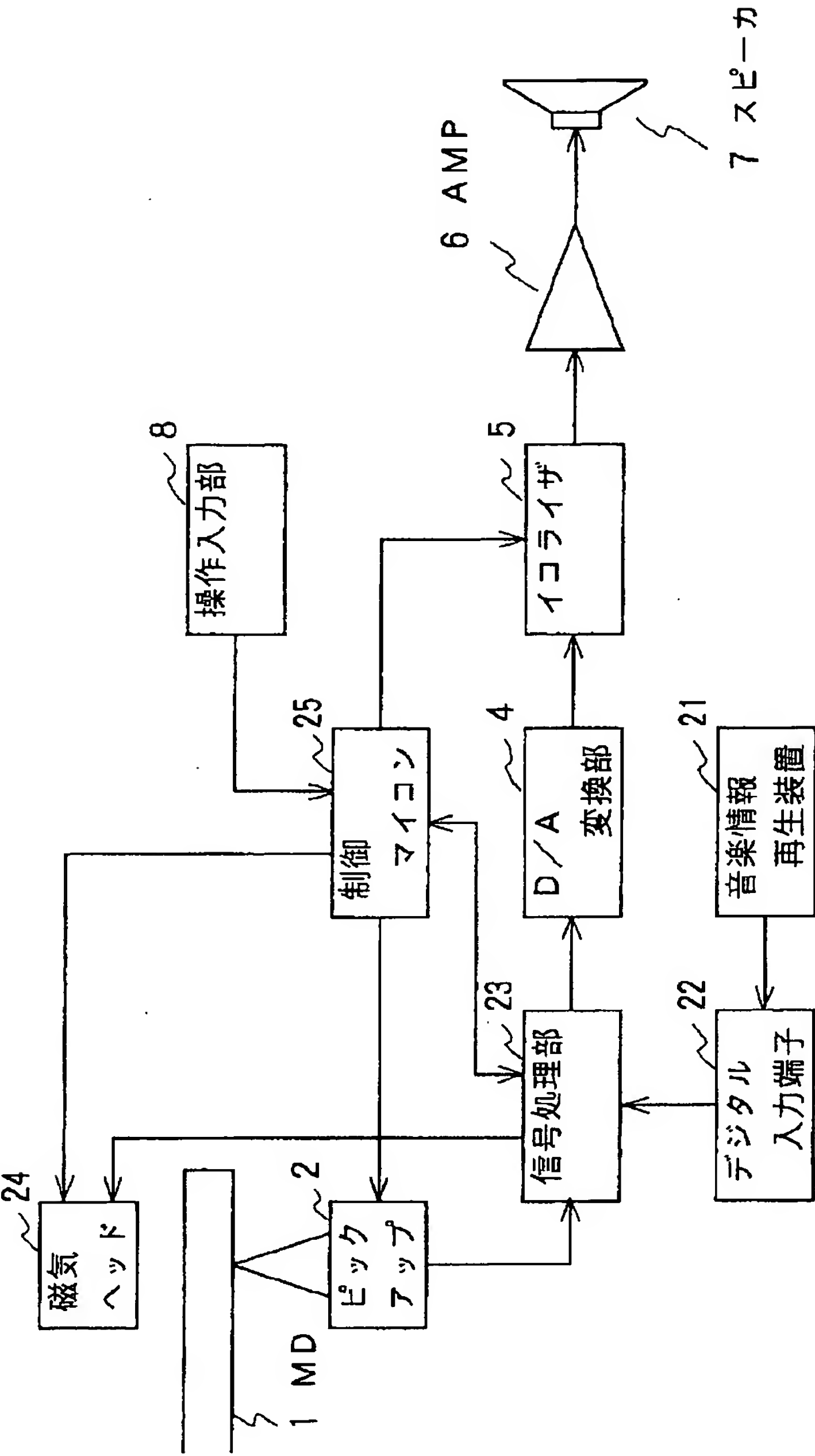


[Drawing 5]

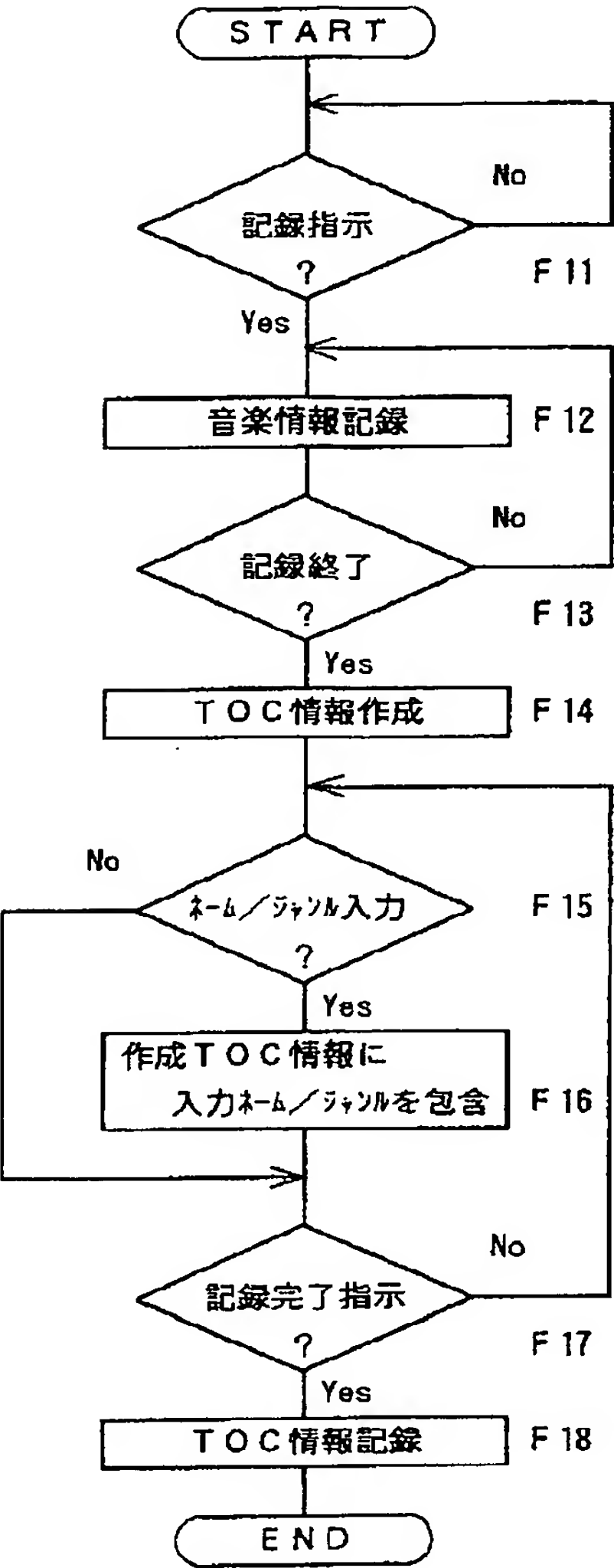


[Drawing 6]





[Drawing 7]



[Translation done.]

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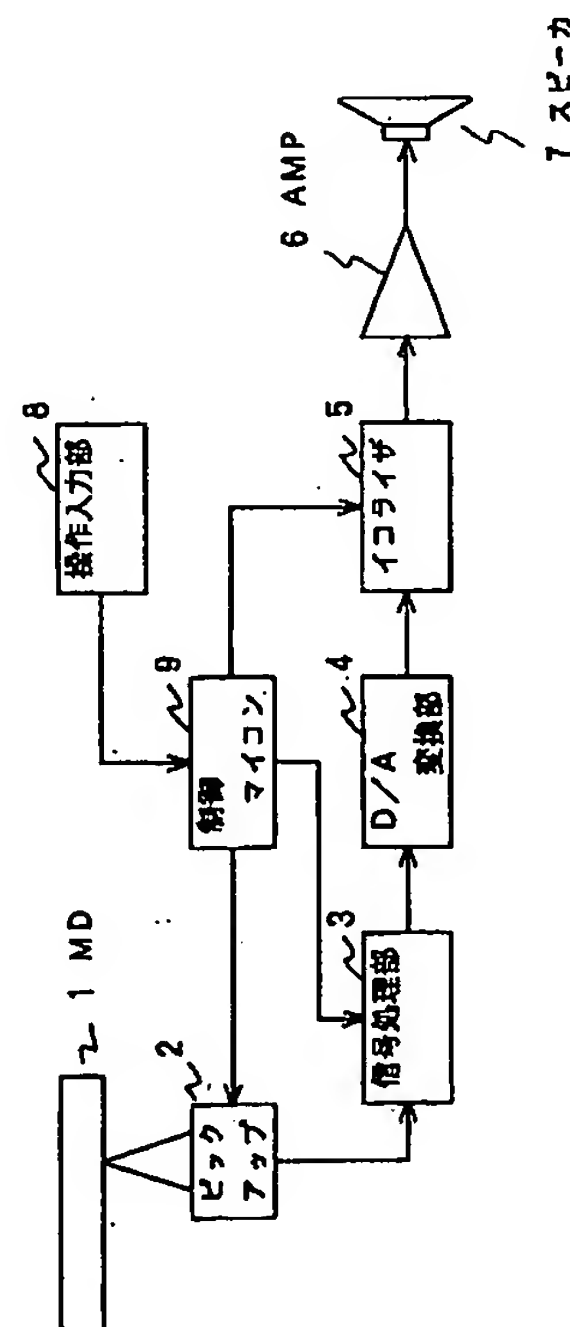
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(54) 【発明の名称】 音楽情報再生装置及び音楽情報記録再生装置

(57) 【要約】

【課題】 使用者による複雑な操作を要することなく、外部放音される音楽情報の音質特性をその音楽ジャンルにあったものにする。

【解決手段】 装置本体にMD 1が装着されると、ピックアップ2によってTOC情報が読み取られ、信号処理部3によって所定の信号処理が施された後、制御マイコン9に内蔵のメモリに格納され、この状態において操作入力部8を操作して再生指示を行うと、制御マイコン9がその再生指示された曲に対応して記憶されているTOC情報から音楽ジャンルを認識すると共に、イコライザ5を制御して認識された音楽ジャンルにあったイコライジングを設定する。





## 【特許請求の範囲】

【請求項1】 音楽情報と、該音楽情報に対応するインデックス情報とが記録された記録媒体を用い、上記記録媒体に記録されたインデックス情報に基づいて、当該インデックス情報に対応する音楽情報を再生する情報再生装置において、情報再生時、上記インデックス情報に含まれる音楽ジャンル情報を読み取る読取手段と、該読取手段によって読み取られた音楽ジャンル情報に基づいて上記記録媒体より再生された音楽情報をイコライジングするイコライジング手段とを設けたことを特徴とする音楽情報再生装置。

【請求項2】 上記記録媒体は、音楽情報及びインデックス情報をデジタル信号として記録する一方、上記記録媒体から再生されたデジタル音楽情報をアナログ音楽情報に変換するD/A変換手段を設け、上記イコライジング手段は、上記D/A変換手段によって変換されたアナログ音楽情報をイコライジングすることを特徴とする請求項1記載の音楽情報再生装置。

【請求項3】 上記記録媒体は、音楽情報及びインデックス情報をデジタル信号として記録する一方、上記イコライジング手段は、上記記録媒体から再生されたデジタル音楽情報をデジタル的にイコライジング処理することを特徴とする請求項1記載の音楽情報再生装置。

【請求項4】 音楽情報と、該音楽情報に対応するインデックス情報とが記録された記録媒体を用い、上記記録媒体に記録されたインデックス情報に基づいて、当該インデックス情報に対応する音楽情報を再生する一方、上記記録媒体に、他の記録媒体より再生された音楽情報を記録すると共に、当該音楽情報に対応するインデックス情報を発生して記録する音楽情報記録再生装置において、音楽情報のジャンルを指定する操作手段と、該操作手段によって指定されたジャンルを音楽ジャンル情報とする音楽ジャンル情報作成手段と、音楽情報記録時、記録する音楽情報に対応して発生するインデックス情報に、上記音楽ジャンル情報作成手段によって作成された音楽ジャンル情報を包含する記録制御手段と、音楽情報再生時、上記インデックス情報に含まれる音楽ジャンル情報を読み取る読取手段と、該読取手段によって読み取られた音楽ジャンル情報に基づいて上記記録媒体より再生された音楽情報をイコライジングするイコライジング手段とを設けたことを特徴とする音楽情報記録再生装置。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】本発明は、音楽情報再生装置

及び音楽情報記録再生装置に関するものである

## 【0002】

【従来の技術】従来より、音楽情報再生装置及び音楽情報記録再生装置としては、記録媒体となるMD (Mini Disc) より音楽情報等を読み出して再生するMD再生装置、記録媒体となるMDより音楽情報を読み出して再生すると共に、MDに音楽情報を記録可能なMD録再装置等があった。

【0003】そして、このようなMD再生装置及びMD録再装置において記録媒体となるMDとしては、再生専用と録再用とがあり、再生専用MDには、音楽情報を記録するデータ記録領域と、該データ記録領域に記録された各データの記録領域を表すアドレス番号、データ記録領域に記録された各データ単位の各曲名等を表すトラックネーム、及び記録媒体のディスクネーム等からなるTOC (Table Of Contents) 領域とが設けられており、各情報はデジタル信号によって記録されている。

【0004】又、録再用MDには、音楽情報を記録し且つその情報が書換可能なデータ記録領域と、該データ記録領域に記録された各データの記録領域を表すアドレス番号等からなるTOC領域と、データ記録領域に記録された各データ単位の各曲名等を表すトラックネーム、及び記録媒体のディスクネーム等の情報を記録し且つその情報を使用者が自由に書き換えることができるUTOC (User Table Of Contents) 領域とが設けられており、各情報はデジタル信号によって記録され、且つ書き換えられる情報もまたデジタル信号である。

【0005】そして、MD再生装置及びMD録再装置において、上記のようなMDを再生する際には、まずTOC領域及びUTOC領域に記録された情報を読み取り、その読み取られた情報に基づいてMDのデータ領域に記録された曲数、曲名、ディスクネーム、及びアドレス情報等を認識し、その曲数、曲名、及びディスクネーム等を表示させ、且つその表示された情報に基づき使用者によって指定曲の再生指示があったとき、その指定曲が記録された領域をアドレス情報に基づいて認識してMDのデータ領域より指定曲に対応する音楽情報を再生していた。

【0006】又、上記のような、MD再生装置及びMD録再装置においては、MDより再生されるデジタル音楽情報等をアナログ音楽情報に変換してスピーカより外部に放音する際において、使用者による操作によってイコライザを任意設定することによってスピーカより外部放音される音楽情報のジャンルにあった音質特性を得ることが可能であった。

## 【0007】

【発明が解決しようとする課題】ところが、上記従来装置では、記録媒体より再生される音楽情報を外部放音される際において、その音楽情報の音質特性をその音楽情報のジャンルにあったものに合わせることができないもの

の、その設定は使用者によって行わなければならない、複雑な操作を要するといった問題点があり、又再生される音楽情報のジャンルによってその音楽情報に合う音質特性が全く異なるため、記録媒体より再生される音楽情報が変わる度に音質特性の調整を行わなければならない、その設定操作が非常に面倒であるといった問題点があった。

【0008】本発明は、使用者による複雑な操作を要することなく、音楽情報のジャンルに合った音質特性によって音楽情報を外部放音させることができる音楽情報再生装置及び音楽情報記録再生装置を提供することを目的とするものである。

【0009】

【課題を解決するための手段】上記目的を達成するために、請求項1記載の発明は、音楽情報と、該音楽情報に対応するインデックス情報とが記録された記録媒体を用い、上記記録媒体に記録されたインデックス情報に基づいて、当該インデックス情報に対応する音楽情報を再生する情報再生装置において、情報再生時、上記インデックス情報に含まれる音楽ジャンル情報を読み取る読取手段と、該読取手段によって読み取られた音楽ジャンル情報に基づいて上記記録媒体より再生された音楽情報をイコライジングするイコライジング手段とを設けたものである。

【0010】請求項2記載の発明は、上記記録媒体は、音楽情報及びインデックス情報をデジタル信号として記録する一方、上記記録媒体から再生されたデジタル音楽情報をアナログ音楽情報に変換するD/A変換手段を設け、上記イコライジング手段は、上記D/A変換手段によって変換されたアナログ音楽情報をイコライジングするものである。

【0011】請求項3記載の発明は、上記記録媒体は、音楽情報及びインデックス情報をデジタル信号として記録する一方、上記イコライジング手段は、上記記録媒体から再生されたデジタル音楽情報をデジタル的にイコライジング処理するものである。

【0012】請求項4記載の発明は、音楽情報と、該音楽情報に対応するインデックス情報とが記録された記録媒体を用い、上記記録媒体に記録されたインデックス情報に基づいて、当該インデックス情報に対応する音楽情報を再生する一方、上記記録媒体に、他の記録媒体より再生された音楽情報を記録すると共に、当該音楽情報に対応するインデックス情報を発生して記録する音楽情報記録再生装置において、音楽情報のジャンルを指定する操作手段と、該操作手段によって指定されたジャンルを音楽ジャンル情報とする音楽ジャンル情報作成手段と、音楽情報記録時、記録する音楽情報に対応して発生するインデックス情報に、上記音楽ジャンル情報作成手段によって作成された音楽ジャンル情報を包含する記録制御手段と、音楽情報再生時、上記インデックス情報に含ま

れる音楽ジャンル情報を読み取る読取手段と、該読取手段によって読み取られた音楽ジャンル情報に基づいて上記記録媒体より再生された音楽情報をイコライジングするイコライジング手段とを設けたものである。

【0013】従って、請求項1記載の発明によれば、装置本体に装着された記録媒体よりインデックス情報が再生されると、読取手段がその再生されたインデックス情報から音楽ジャンル情報を読み取り、イコライジング手段がその読み取られた音楽ジャンル情報に基づいてイコライジングの設定を行うことにより、記録媒体より再生される音楽情報に対して、その音楽ジャンルにあったイコライジングを施すことができる。

【0014】請求項2記載の発明によれば、装置本体に装着された記録媒体よりインデックス情報が再生されると、読取手段がその再生されたインデックス情報から音楽ジャンル情報を読み取り、イコライジング手段がその読み取られた音楽ジャンル情報に基づいてイコライジングの設定を行う一方、記録媒体より再生されたデジタル音楽情報は、D/A変換手段によってアナログ音楽情報に変換された後、そのアナログ音楽情報に対してイコライジング手段が上記設定に基づくイコライジングを行うことにより、記録媒体より再生される音楽情報に対して、その音楽ジャンルにあったイコライジングを施すことができる。

【0015】請求項3記載の発明によれば、装置本体に装着された記録媒体よりインデックス情報が再生されると、読取手段がその再生されたインデックス情報から音楽ジャンル情報を読み取り、イコライジング手段がその読み取られた音楽ジャンル情報に基づいてイコライジングの設定を行う一方、イコライジング手段がその設定に基づいて記録媒体より再生されるデジタル音楽情報をデジタル的にイコライジングすることにより、記録媒体より再生される音楽情報に対して、その音楽ジャンルにあったイコライジングを施すことができる。

【0016】請求項4記載の発明によれば、装置本体に装着された記録媒体への音楽情報の記録が行われたときにおいて、操作手段によって記録される音楽情報のジャンルが指定されると、音楽ジャンル情報作成手段がその指定されたジャンルに基づいて音楽ジャンル情報を作成し、その作成された音楽ジャンル情報を記録制御手段が記録する音楽情報に対応して発生するインデックス情報に包含することにより、音楽情報と、当該音楽情報に対応する音楽ジャンル情報とを記録媒体に記録することができる一方、装置本体に装着された記録媒体よりインデックス情報が再生されると、読取手段がその再生されたインデックス情報から音楽ジャンル情報を読み取り、イコライジング手段がその読み取られた音楽ジャンル情報に基づいてイコライジングの設定を行うことにより、記録媒体より再生される音楽情報に対して、その音楽ジャンルにあったイコライジングを施すことができる。



【0017】

【発明の実施の形態】以下、本発明の実施の形態について図面を参照して詳細に説明する。

【0018】図1は本発明の第一実施例である音楽情報再生装置の電氣的構成を示す概略機能ブロック図、図2は同音楽情報再生装置におけるメモリのデータ構成例を示す説明図、図3は同音楽情報再生装置におけるイコライジング設定例を示す説明図、図4は同音楽情報再生装置における音楽情報再生時の動作制御を示すフローチャート、図5は本発明の第二実施例である音楽情報再生装置の電氣的構成を示す概略機能ブロック図、図6は本発明の第三実施例である音楽情報記録再生装置の電氣的構成を示す概略機能ブロック図、図7は同音楽情報記録再生装置における音楽情報記録時の動作制御を示すフローチャートである。

【0019】〔第一実施例〕本発明の第一実施例について、図1乃至図4に基づいて説明する。

【0020】図1において、1は音楽情報及び当該音楽情報に対応するTOC情報又はUTOC（インデックス情報）がデジタル信号として記録されたMD、2はMD1に記録されたデジタル信号を読み取るピックアップであり、図示しない駆動機構によってMD1の半径方向に移動自在に設けられている。3はピックアップ2によって読み取られたデジタル信号に対して所定の信号処理を施す信号処理部、4は信号処理部3によって信号処理が施されたデジタル信号をアナログ信号に変換するD/A変換部、5はD/A変換部4によって変換されたアナログ信号の所定の各周波数帯のレベルを増幅又は減衰（イコライジング）するイコライザ、6はイコライザ5によってイコライジングされたアナログ信号を増幅するAMP、7はAMP6によって増幅されたアナログ信号を振動に変換し音として外部に放音するスピーカ、8は再生/早送り/巻戻し/停止/一時停止等の指示、及び選曲操作等を行う操作入力部、9は信号処理部3によって所定の信号処理が施されたTOC情報、及び操作入力部8による操作指示に基づいてピックアップ2の駆動制御、信号処理部3による信号処理制御、イコライザ5によるイコライジング設定制御を行う制御マイコンであり、TOC情報を記憶するためのメモリを内蔵している。

【0021】上記のように構成された音楽情報再生装置について、音楽情報再生時の動作制御を説明する。

【0022】装置本体にMD1が装着される（ステップF1）と、ピックアップ2によってその装着されたMD1からTOC情報又はUTOC情報が読み取られ、信号処理部3によって所定の信号処理が施された後、制御マイコン9に内蔵のメモリに格納される（ステップF2）。このとき、制御マイコン9に内蔵のメモリには、図2に示すように、MD1のディスクネームとその音楽ジャンル、及び各曲に対するトラックネームとその音楽ジャンルとその曲のアドレスが各領域に記憶される。

【0023】そして、このような状態において、使用者が操作入力部8を操作して再生指示を行う（ステップF3）と、制御マイコン9がその再生指示された曲に対応するTOC情報又はUTOC情報として音楽ジャンルが記憶されているか判断し（ステップF4）、音楽ジャンルが記憶されていると判断された場合には、制御マイコン9がイコライザ5を制御して認識された音楽ジャンルに合ったイコライジングを設定する（ステップF5）。

【0024】即ち、例えば、図2（a）に示すようなTOC情報が制御マイコン9に内蔵のメモリに格納されている状態において、使用者が操作入力部8を操作して2曲目の再生指示を行うと、制御マイコン9はイコライザ5を制御して各周波数帯のレベルを図3（d）に示すような値に設定し、イコライザ5によるイコライジングを“VOCAL”とする。

【0025】他方、使用者が操作入力部8を操作して再生指示を行い（ステップF3）、制御マイコン9においてその再生指示された曲に対応するTOC情報又はUTOC情報として音楽ジャンルが記憶されていないと判断された場合（ステップF4）には、次にディスクネームに対応する音楽ジャンルが記憶されているか判断し（ステップF6）、音楽ジャンルが記憶されていると判断された場合には、制御マイコン9がイコライザ5を制御して認識された音楽ジャンルに合ったイコライジングを設定する（ステップF7）。

【0026】即ち、例えば、図2（a）に示すようなTOC情報が制御マイコン9に内蔵のメモリに格納されている状態において、使用者が操作入力部8を操作して3曲目の再生指示を行うと、制御マイコン9はイコライザ5を制御して各周波数帯のレベルを図3（a）に示すような値に設定し、イコライザ5によるイコライジングを“ROCK”とする。

【0027】又、使用者が操作入力部8を操作して再生指示を行い（ステップF3）、制御マイコン9においてその再生指示された曲に対応するTOC情報又はUTOC情報として音楽ジャンルが記憶されていないと判断され（ステップF4）、且つディスクネームに対応する音楽ジャンルが記憶されていないと判断された場合（ステップF6）には、制御マイコン9がイコライザ5を制御して各周波数帯のレベルを図3（e）に示すような値に設定し（ステップF8）、イコライザ5によるイコライジングを“FLAT”とする。

【0028】即ち、例えば、図2（b）に示すようなTOC情報が制御マイコン9に内蔵のメモリに格納されている状態において、使用者が操作入力部8を操作して1曲目の再生指示を行うと、制御マイコン9はイコライザ5を制御して各周波数帯のレベルを図3（e）に示すような値に設定し、イコライザ5によるイコライジングを“FLAT”とする。

【0029】そして、上記のようなイコライザ5による

イコライジングの設定が行われた後、制御マイコン9が内蔵のメモリに記憶されたTOC情報またはUTOC情報に基づいてピックアップ2を駆動制御して操作入力部8によって再生指示された曲が記録されたデータ領域に位置させ、当該データ領域の所定位置より音楽情報の読み取りを行う(ステップF9)。

【0030】そして、このように、ピックアップ2によってMD1より読み取られた音楽情報(デジタル信号)は信号処理部3によって所定の信号処理が施された後、D/A変換部4によってアナログ信号に変換され、そのアナログ信号はイコライザ5によってイコライジングされた後、AMP6によって増幅され、スピーカ7より外部に放音される。

【0031】従って、上記動作制御によれば、MD1に記録された音楽情報を再生する際において、その音楽情報のジャンルにあった音質特性を自動的に得ることができる。

【0032】[第二実施例] 本発明の第二実施例について、図5に基づいて説明する。尚、図5において図1と共通する部分には共通の符号を付してある。

【0033】図5において、11はピックアップ2によってMD1から読み取られたデジタル信号に対して所定の信号処理を施すことによってデジタルオーディオ信号を得る一方、そのデジタルオーディオ信号をデジタル的にイコライジングする信号処理部、12は信号処理部11によって信号処理されたデジタル信号を装置外部に出力するデジタル出力端子、13はデジタル出力端子11より出力されたデジタル信号を記録する音楽情報記録装置である。

【0034】そして、上記のように構成された音楽情報再生装置において、使用者が操作入力部8を操作して再生指示を行うと、上述の第一実施例と同様の動作制御によって再生指示が成された曲の音楽ジャンルを認識し、その音楽ジャンルに基づいて制御マイコン9が信号処理部11を制御することにより、ピックアップ2によってMD1から読み取られたデジタル信号に対して信号処理を施し得られたデジタルオーディオ信号に所定の信号処理を施すことによって当該デジタルオーディオ信号をデジタル的にイコライジングする。

【0035】そして、信号処理部11によってイコライジングされたデジタルオーディオ信号は、D/A変換部4によってアナログ信号に変換された後、AMP6によって増幅され、スピーカ7より外部に放音される一方、デジタル出力端子12を経て音楽情報記録装置13に入力され、この音楽情報記録装置13によってデジタル録音される。

【0036】尚、このデジタル的なイコライジングとは、デジタルオーディオ信号をD/A変換部4によってアナログ信号に変換することによって得られるアナログオーディオ信号の所定の周波数帯のレベルを増幅/減衰

することによって所定の音質特性が得られたアナログオーディオ信号をA/D変換してデジタルオーディオ信号としたときと同等の信号となるように、デジタルオーディオ信号に所定の信号処理を施すものであり、従って、信号処理部11によってイコライジングされたデジタルオーディオ信号をD/A変換部4によってアナログ信号に変換すると、所定の音質特性が得られたアナログオーディオ信号が得られる。

【0037】従って、上記動作制御によれば、MD1に記録された音楽情報を再生する際において、その音楽情報のジャンルにあった音質特性を自動的に得ることができると共に、デジタル録音する際において、最適の音質特性が得られた音楽情報をデジタル出力することができる。

【0038】[第三実施例] 本発明の第三実施例について、図6及び図7に基づいて説明する。

【0039】尚、図6において、図1と共通する部分には共通の符号を付してある。

【0040】図6において、21はデジタルオーディオ信号を出力するデジタル出力端子を備えた音楽情報再生装置、22はデジタルオーディオ信号を外部入力するデジタル入力端子、23はデジタル入力端子22より入力されるデジタルオーディオ信号に所定の信号処理を施す一方、ピックアップ2によって読み取られたMD1からのデジタル信号に所定の信号処理を施す信号処理部、24は信号処理部23によって信号処理されたデジタル入力端子22よりのデジタル信号に基づいて磁界変調を行いMD1に印加する磁気ヘッドであり、図示しない駆動機構によってピックアップ2と追従してMD1の半径方向に移動自在に設けられている。

【0041】25は信号処理部3によって所定の信号処理が施されたTOC情報、及び操作入力部8による操作指示に基づいてピックアップ2の駆動制御、信号処理部3による信号処理制御、イコライザ5によるイコライジング設定制御、及び磁気ヘッド24の駆動制御を行うと共に、信号処理部23によって信号処理されたデジタル入力端子22よりのデジタル信号、ピックアップ2によって読み取られる絶対アドレス、及び操作入力部8によって操作入力されたディスクネーム/トラックネーム/ジャンル名等に基づいてUTOC情報を作成する制御マイコンであり、TOC情報及びUTOC情報を記憶するためのメモリを内蔵している。

【0042】上記のように構成された音楽情報記録再生装置について、音楽情報記録時の動作制御を説明する。

【0043】装置本体にMD1が装着され、その装着されたMD1のTOC情報又はUTOC情報が読み取られて制御マイコン25に内蔵のメモリに格納されている状態において、使用者が操作入力部8を操作して記録指示を行う(ステップF1.1)と、制御マイコン25が内蔵のメモリに記憶されたTOC情報又はUTOC情報に基



づいて装置本体に装着されたMD 1の空きデータ領域を認識し、ピックアップ2及び磁気ヘッド24を駆動制御してその空きデータ領域に位置させる一方、信号処理部23によって信号処理されたデジタル端子よりのデジタル信号を磁気ヘッド24に供給してMD 1に磁界変調を印加すると同時にMD 1にピックアップ2より光ビームを照射することにより、デジタル端子22より供給され信号処理されたデジタル信号をMD 1に記録する(ステップF 12)。

【0044】そして、上記のようなMD 1に対するデジタル信号の記録が終了する(ステップF 13)と、制御マイコン25がその記録結果に基づいてTOC情報を作成し(ステップF 14)、このとき、使用者が操作入力部8を操作してディスクネーム又はトラックネームを入力する(ステップF 15)と、その入力されたディスクネーム、トラックネーム、又は音楽ジャンルを作成したTOC情報又はUTOC情報に包含する(ステップF 16)。尚、作成されたTOC情報又はUTOC情報は制御マイコン25に内蔵のメモリに格納される。

【0045】そして、使用者がその登録した内容で良いと判断し、操作入力部8を操作して記録完了を指示する(ステップF 17)と、制御マイコン25が内蔵メモリに格納されたTOC情報又はUTOC情報を上記データ記録時の動作制御と同様の動作制御によってMD 1のTOC領域又はUTOC領域に記録する(ステップF 18)。

【0046】従って、上記動作制御によれば、外部入力された音楽情報を装着されたMD 1にデジタル記録する際において、その音楽情報に合った音楽ジャンルをその音楽情報に対応させてMD 1に記録することができる。

【0047】尚、上記実施例においては、外部入力されたデジタル信号をMD 1に記録する際について説明したが、これに限定するものではなく、例えば記録媒体に記録された曲を分割又は併合させる場合(編集時)においても同様に当該編集曲の音楽ジャンルをTOC情報又はUTOC情報としてMD 1に記録するようにしても良く、その際の動作制御としては、上記実施例の動作制御(ステップF 14～ステップF 18)と略々同様であり、その詳細な説明については省略する。

【0048】又、音楽情報再生時の動作制御については上述の第一実施例における動作制御と同様であり、その説明については省略する。

【0049】

【発明の効果】以上のように、請求項1又は請求項2記載の発明によれば、音楽情報再生時、記録媒体より再生される音楽情報に対応する音楽ジャンルを読み取り、その音楽ジャンルにあったイコライジングを設定することにより、使用者による複雑な操作を要することなく、音

楽情報の音楽ジャンルに合った音質特性によって記録媒体より再生された音楽情報を外部放音させることができる。

【0050】請求項3記載の発明によれば、音楽情報再生時、記録媒体より再生される音楽情報に対応する音楽ジャンルを読み取り、その音楽ジャンルにあったイコライジングを設定した後、そのデジタル音楽情報のイコライジングをデジタル的に行うことにより、使用者による複雑な操作を要することなく、音楽情報の音楽ジャンルに合った音質特性によって記録媒体より再生された音楽情報を外部放音させることができ、且つ記録媒体より再生される音楽情報を他の記録媒体にデジタル記録する際において、当該他の記録媒体に最適の音質特性に成された音楽情報を記録することができる。

【0051】請求項4記載の発明によれば、音楽情報記録時、音楽情報と共に当該音楽情報に対応する音楽ジャンルを記録媒体に記録する一方、音楽情報再生時、記録媒体より再生される音楽情報に対応する音楽ジャンルを読み取り、その音楽ジャンルにあったイコライジングを設定することにより、使用者による複雑な操作を要することなく、音楽情報の音楽ジャンルに合った音質特性によって記録媒体より再生された音楽情報を外部放音させることができる。

【図面の簡単な説明】

【図1】本発明の第一実施例である音楽情報再生装置の電気的構成を示す概略機能ブロック図。

【図2】同音楽情報再生装置におけるメモリのデータ構成例を示す説明図。

【図3】同音楽情報再生装置におけるイコライジング設定例を示す説明図。

【図4】同音楽情報再生装置における音楽情報再生時の動作制御を示すフローチャート。

【図5】本発明の第二実施例である音楽情報再生装置の電気的構成を示す概略機能ブロック図。

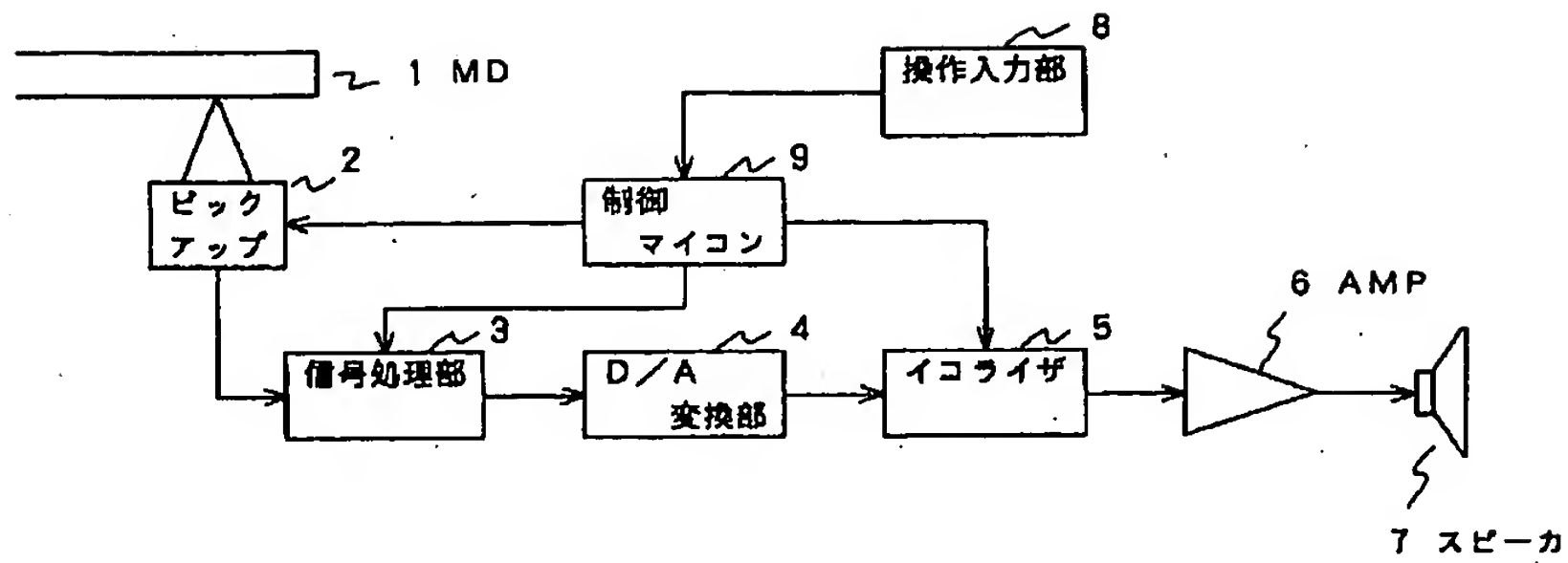
【図6】本発明の第三実施例である音楽情報記録再生装置の電気的構成を示す概略機能ブロック図。

【図7】同音楽情報記録再生装置における音楽情報記録時の動作制御を示すフローチャート。

【符号の説明】

- 1 MD
- 2 ピックアップ
- 3 信号処理部
- 4 D/A変換部
- 5 イコライザ
- 6 AMP
- 7 スピーカ
- 8 操作入力部
- 9 制御マイコン

【図1】



【図2】

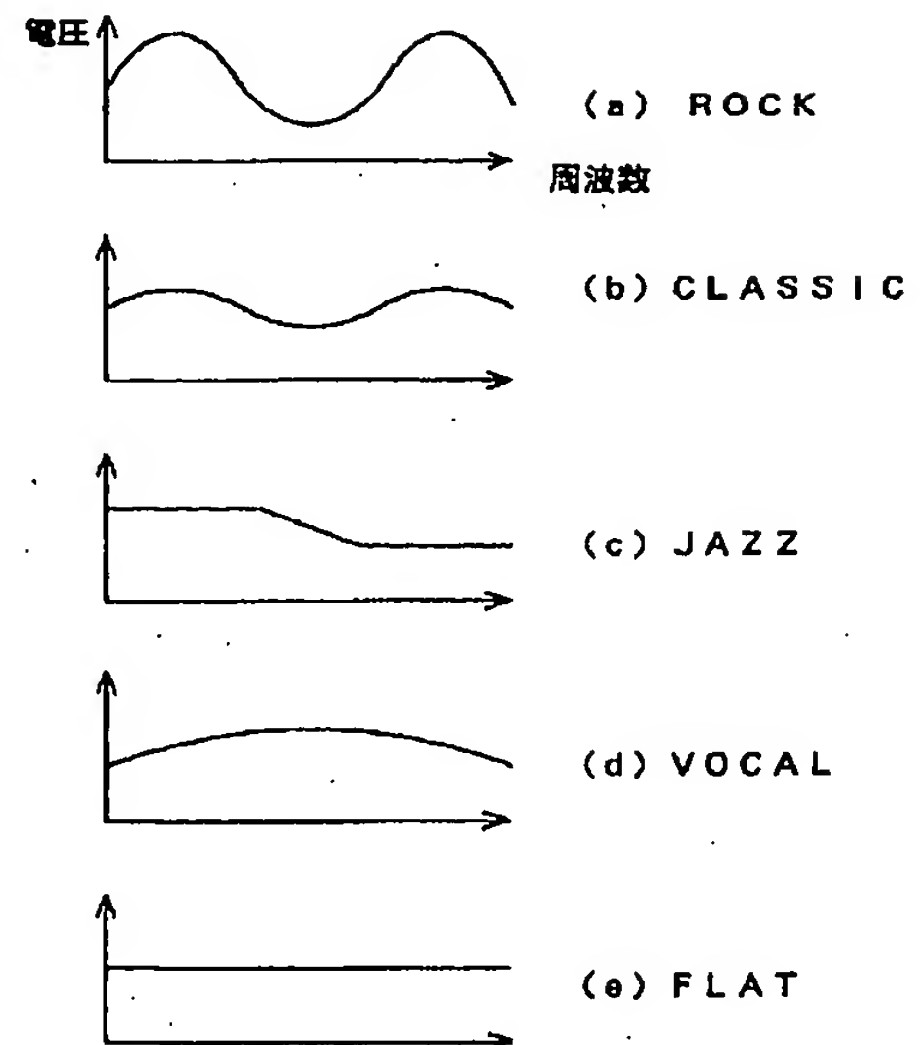
	ネーム	音楽ジャンル	アドレス
ディスク	oooooooooooo	ROCK	
TNO1	△△△△△△△		.....
TNO2		VOCAL	.....
TNO3	oooooooooooo	ROCK	.....
TNO4	△△△△	FLAT	.....
TNO5			

(a)

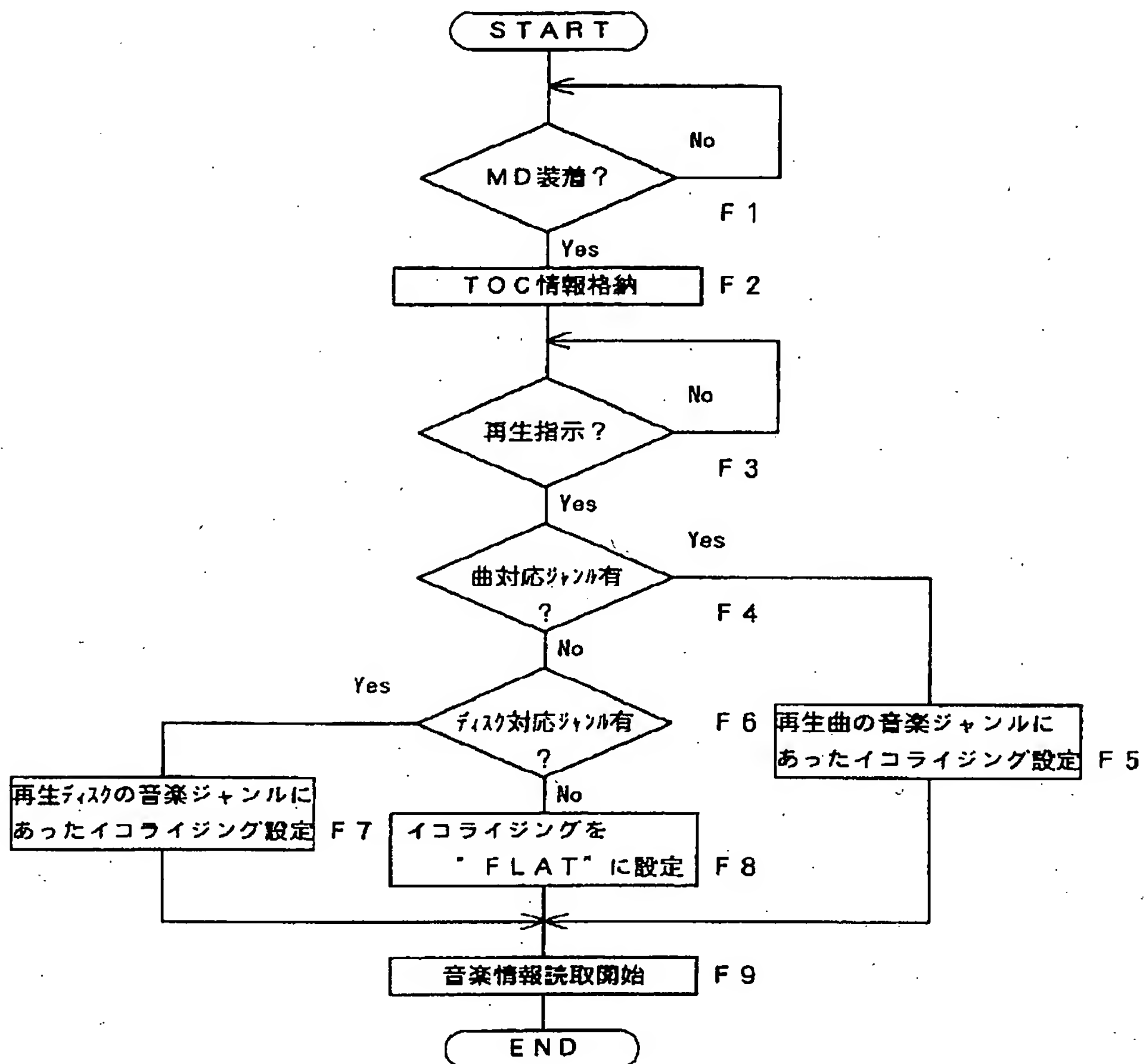
	ネーム	音楽ジャンル	アドレス
ディスク	oooooooooooo		
TNO1	△△△△△△△		.....
TNO2		VOCAL	.....
TNO3	oooooooooooo	ROCK	.....
TNO4	△△△△	FLAT	.....
TNO5			

(b)

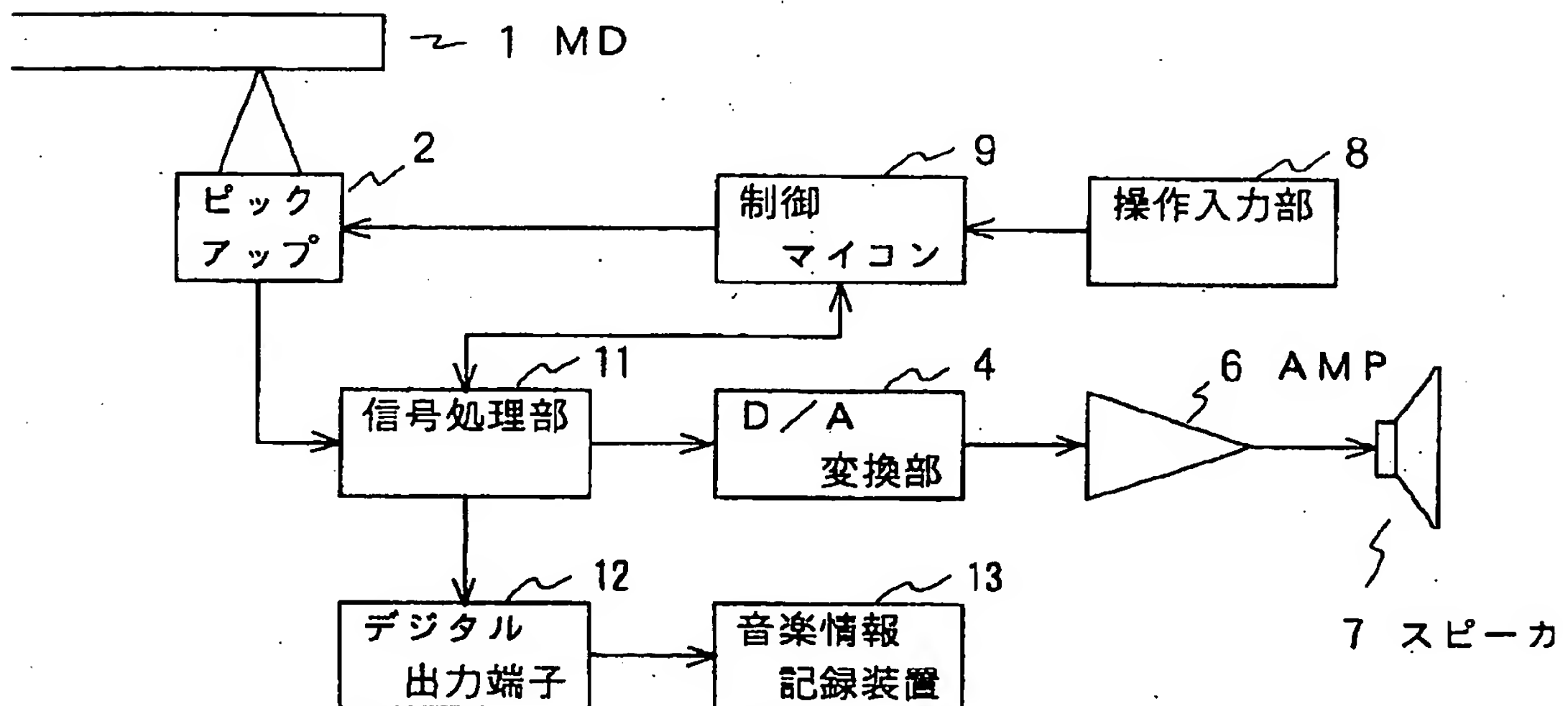
【図3】



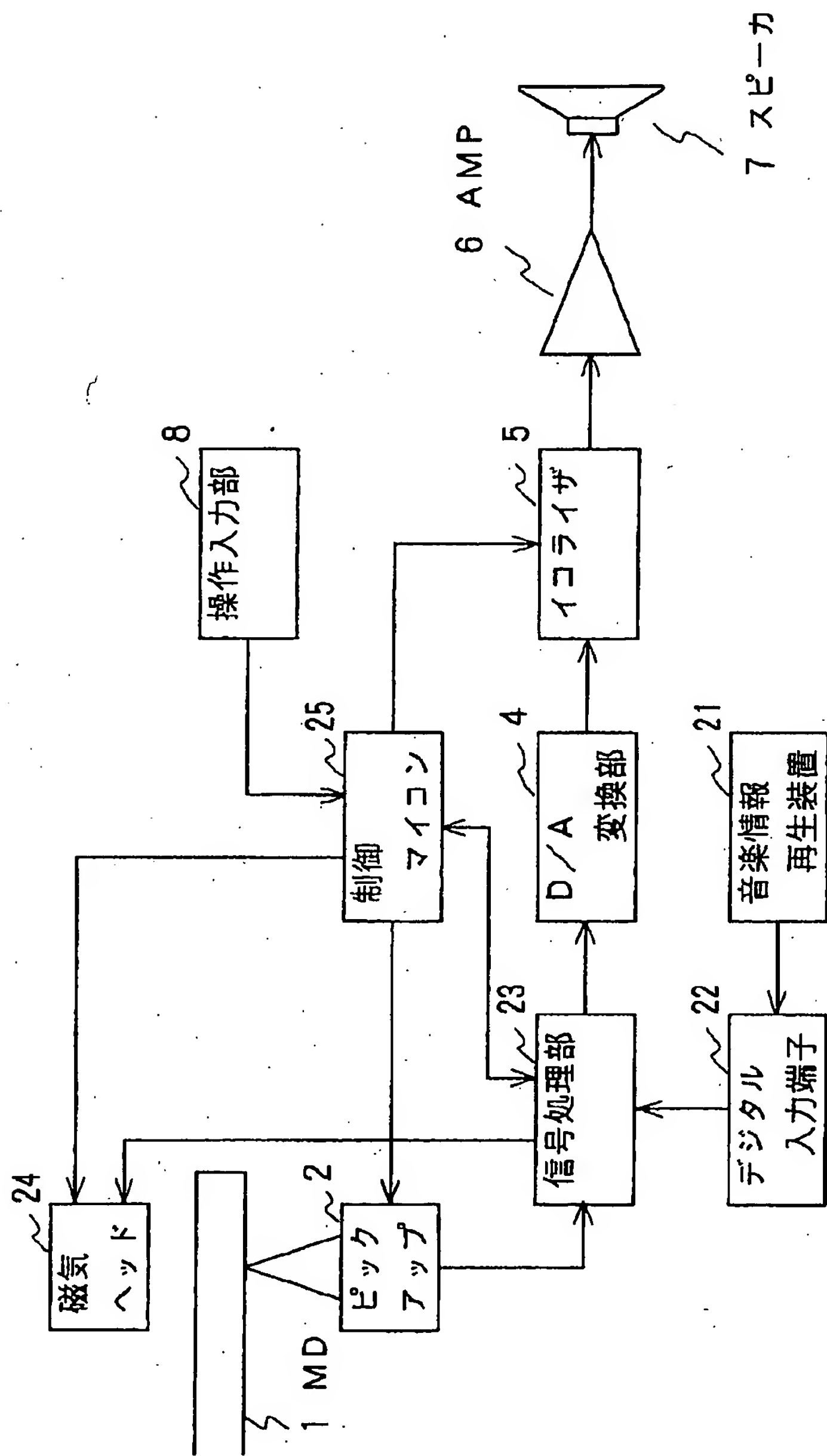
【図4】



【図5】



【図6】





【図7】

